Context Sensitive Health Informatics: Redesigning Healthcare Work
C. Nøhr et al. (Eds.)

© 2017 The authors and IOS Press.
This article is published online with Open Access by IOS Press and distributed under the terms of the Creative Commons Attribution Non-Commercial License 4.0 (CC BY-NC 4.0).
doi:10.3233/978-1-61499-794-8-103

Understanding Through Use: Elderly's Value Identification in a Service Experience

Bertil LINDENFALK[a1] and Vivian VIMARLUND[a, b]
[a] *Jönköping University – International Business School, Jönköping, Sweden*
[b] *Department of Computer and Information Sciences, Linköping University*

Abstract. This paper uses a qualitative approach, specifically; narrative analysis, to contextualize user's formulation of an understanding of a personalized meal planning service within the ambient assisted living domain. By focusing on how user's, in this case elderly over 65, formed an understanding of a service, and, what they thought valuable in using the service, based on their understanding. The results indicate how user's compare their initial understanding to their experienced understanding, formed during usage, and how this affects their value formulation of specific service aspects. The paper gives not only provides valuable insight into contextualizing aspects of health and wellness services, but to aspects of importance for implementation, by showing how value aspects of services from a user perspective are important to consider during these processes.

Keywords. Service, Expectation-Confirmation, Use, Ambient Assisted Living, Narrative Analysis

Introduction

What services are and how they should be managed have been researched for quite some time, see e.g. [1; 2]. What is agreed upon, is that the value of a service is mainly determined by the service user through use [1; 3]. Areas such as usability engineering have highlighted the importance of usability aspects (effectiveness, efficiency and satisfaction) when designing for instance digital user interfaces [4] to support use. The affordance entwined in an object has also been highlighted as an important aspect to support use [5]. However, for services, which are intangible, there is an underlying assumption that 'service' and 'use' have been easy to understand as a user. For example, when asking users about their service experience, the focus has been on the experience [1; 6] or on the interaction with specific objects which are part of the service but do not make up the service as a whole [7]. Due to the intangible nature of service, the service environment have been identified to play an important role for the user as a way to guide them in their usage [8]. If a user does not know how to use a service it becomes impossible for them to identify the value of the service. But how is this understanding formulated? The study of the formation of an understanding of a service relative to use, for the purposes of value identification, demand approaches that allow the user to be present and transparent in the analysis. Narrative inquiry is an approach that has been

[1] Corresponding Author: Bertil Lindenfalk. Email: bertil.lindenfalk@ju.se

used extensively in health research, especially when giving insights into for example accounts of cancer from the patient's perspective [9]. Its contextualizing ability and strong user focus has proved to yield interesting results for the medical sciences [10].

The aim of this paper is to describe how and what is considered valuable in a service, in relation to the understanding that the users obtain from the description of a service before first usage. The results will contribute to further understanding of how individuals value services and how they formulate an understanding of a service through a service experience.

Context of the study - a personalized meal planning service

The project "Framework for optimizing the process of feeding" (FOOD) intended to create a service which supported safety, autonomy and effectiveness for people over 65 without any major health problems and their routines connected to the process of feeding. This included acquiring, cooking and eating not only as isolated activities but also from a social perspective. Perspectives that were identified through user research during the project [11].

The 24 participating households received fully functional smart ovens, a hob (similar to the North American electric induction/gas range) with sensors and a refrigerator with a smart box inside in order to have it connect to the internet. All appliances were accessible through an application on the tablet to check their status, but, only the oven could be controlled via the application. Features included setting the temperature, downloading specific cooking programs for certain foods, and turning the oven on and off. In addition, sensors were installed to see if drawers and cupboards were opened and check if there were a fire or a possibility for flooding. In which case, a push notification was sent to the user through the application. The tablet application also contained recipes produced by a nutritionist of classical dishes specific for the participating regions, which could be turned into shopping lists. Apart from the FOOD application the tablets were fully functional and the participants were free to use them as they wished.

The service also tried to adapt to the social aspects of cooking, the participants could for instance call each other via video. They could also add their own recipes and share them with the other participants, and add videos showing how to cook the recipe.

1. Method - Narrative inquiry and its contextualizing ability

In this paper, we used a narrative analysis approach to contextualize how elderly over 65 formulate an understanding of a meal planning service, by *using* the *service*. One of the strengths of narrative inquiry is that it attempts to understand how people think through events and what they see as valuable during that event [10]. A problem with narrative inquiry and analysis is that there is not one way to perform these studies. The debate revolves around why and how stories are told [12; 13]. A suggested approach is to collect stories from informants and as a researcher create narratives that stretch across these stories given a certain focal point [14]. For the purposes of this study, we adopt this approach to follow a consistent sequence of inquiry.

In order to understand the relationship between understanding and reality, the analysis focus on i) events where the service was reflected upon, ii) events where value was adhered to the service and iii) what enforced this value for the user in the story. Given this, the focus of the analysis lie on what is mentioned and portrayed in the data.

1.1. Data collection

The analysis is based on 17 interviews with pilot participants living in Romania and the Netherlands. The interviews were of a semi-structured nature and focused on the participant's usage, experience and understanding of the service that they tested. In total 26 participants, across 24 households, participated in the pilot however not all of them chose to participate in the interviews. In addition to the interviews we also conducted two written interviews, with the pilot coordinators for Romania and the Netherlands. These reports focused on their understanding of how the users adopted and used the piloted service. All activities were carried out toward the end of the project, giving the pilot participants ample time to use and get familiarized with the service.

2. Results and analysis

In this section, we present the analysis of the stories told by the respondents. It follows the narrative of the three different focuses that was used to analyze the material. First, we present the formulation of an understanding of the service, then we contrast this to what the users found valuable and finally how technology entered the participants lives and the value aspects of that process.

2.1. Forming an understanding of the service

The users understanding of the service started with comparing the experienced service to the service that they had been promised, i.e. the reason why they got interested in participating in the pilot. The service was expected to help the participants in living life independently and help them while getting older. The respondents spoke in almost dreamlike terms where the introduction of the service would mean the end of all their daily troubles and worries. As one participant stated: "*I was hoping the service would make my life easier and would help me to continue living independently. Furthermore, I expected the service to be something new and to be all about the connection of food with the internet (looking for recipes online, turn on the oven via the tablet, getting feedback from the sensors via the tablet etc.).*"

Other respondents, although stating the same reasons as others, were more specific in their view of what the service should help them with. Stating things like; being able to control the appliances, stimulate them to cook healthier and that the sensors would send information to the tablet application and show them their daily progress of how they were doing in their quest to eat better, as one participant explained: *"I expected to be able to turn on the oven from the couch, to work with automatic oven programs, to look up and share recipes, to connect with other participants, to send shopping lists to my relatives, to get feedback about my activities in the kitchen and for example about alarms going off."* Although they expressed that the service would help them to live more independently they were more restrictive in the way it would do so. It was not seen as 'the' solution to all their problems but perhaps part of it.

In contrast to what they expected, almost everyone answered that their initial hopes for the service was not fulfilled. Many believed that there was no service, only appliances and an application on a tablet: "*Of course, we have the kitchen equipment and the tablet, but a real service has not been offered during the pilot period."* They referred to the application and that it allowed them to look up recipes to cook and that they could control

the oven from the tablet but this, in their view, did not make up a service. A service for them was something more, something different, but what *it* was, they never reflected upon per se. Instead they reverted to the independent living aspects of the initial promise. The exploration of what the service could be was however told in two different ways. In the first one, which was the main story of the Dutch participants, was that they immediately started to test every feature of every appliance and in the application: "*I have used all functionalities that are available on the app at the moment: sharing and uploading recipes, starting conversations with other participants, sending shopping lists to my relatives".*

In Romania, another narrative was told. There a more restrictive approach was adopted, in which they left the newly received appliances and tablet almost untouched for the fear of breaking it if they used it. They thought that, due to their lack of experience with high-tech appliances and tablets, they would break something if they did something wrong. To learn how they should go about using the different appliances and the application they called the local contact point for the pilot, no one mentioned reading manuals. As the Romanian pilot coordinator reported: *"They were concerned at the beginning that they could not give the expected feedback for the project. They called me before writing something in diaries of photo gallery and ask me if they are doing the right things".*

2.2. Service value adherence

The value adherence mentioned by the participants were all tied together with the tangibles used in the service, i.e. the kitchen appliances, the sensors and the tablet via the application. The refrigerator was only mentioned in passing, the oven and induction hob on the other hand created some reactions. On a positive note, both were experienced as speeding up the process of cooking in comparison to before and both were experienced to be safer than the usual gas alternative that the participants had owned before; "*We very much like the induction hob. It works perfectly and is much safer than a gas hob".* The oven had a couple of negative side effects due to its connectivity and the digital display. This was felt to be too small to read for the elderly, "*On top of that, change the display of the oven, so that it is better readable for elderly (...)".*

The application used to control the appliances, scroll through recipes and socializing features was something that the participants reacted to in terms of value. The participants especially reacted negatively on the recipes as they experienced it as being created for someone that was not in their situation. One participant stated: "*With respect to the app, I think it is not tailored to elderly people's needs, especially not elderly who live in the Netherlands and who live by themselves. The recipes are made for 6 persons or more meanwhile I am living by myself".* They did try out a couple of the recipes and thought that it was fun to cook again, it was something new, but, as it was not connected to existing platforms of good recipe databases they felt the selection to be scarce after initial exploration. Uploading own recipes was also felt as a long and gruesome process which they did not enjoy. In addition, when no one reacted on their contribution to the recipe database they felt that the socializing feature that they had wanted to access with their action was not reciprocated by other participants, and hence, they felt discouraged.

The service also utilized sensors which to a large extent was passive. Here two narratives were told in terms of value, one of abundance and the other of safety. One narrative felt that they were excessive and were not needed in the service if they did not provide users, with any sort of feedback and progress report. For instance, one participant

remarked: "*the sensors need to give feedback to the participants and to relatives/friends etc*". The other narrative told was that just by being there participants felt safer as they knew that if something were to go wrong they would get notified immediately.

The final remark, and perhaps the most important, was that the participants did not *feel* that the service, via the appliances and the application, was designed and developed specifically for them. This was due to small things such as the display on the oven or the amount of people that each recipe was intended for. It did not correspond to their view of their daily lives and hence they did not feel that the service was tailored for them.

3. Discussion

The narratives provided by the pilot participants seem to indicate that the understanding of the service is constituted on the tangible objects or structured interactions thereof. Given this, value adherence is given to these tangibles and interactions as being either positive or negative. There is however a clear mismatch between *what* the service is and the pieces that it is constructed of. The participants were promised a service that would help them to live independently longer by means of motivating them to eat healthier and what they felt they got was a badly designed application that did not suit the self-image that they had of themselves as elderly, they felt discouraged to continue to use the service. The proposed service value that they thought they should receive was not fulfilled, which is a clear mismatch between expectation and confirmation as explained by Expectancy Confirmation Theory [15]. However, from a service point of view, they continued to use the service by not taking away the sensors, using the kitchen appliances received and by cooking food. They did not however feel as if they experienced a service, their expectations were not confirmed. The value adding features of the service as identified by the users, were the same features as they felt were badly designed and hence stopped using. Something which put emphasis of the mismatch between expectation and confirmation and the lack of service, in their opinion.

This mismatch makes it important to consider value aspects of the service promise made to the potential users as it seems to be a strong regulator of the overall experience of a service. If services, that have an underlying intention to aid elderly people in their daily lives and hence de-load society of care necessities, want to succeed, it is important to consider these small nuances of what makes something worth using and not. Focusing on user's expectation and experience of use is important, as research has shown [6; 15; 16], however the contextualizing features that form these expectations and experiences are equally important to consider. With the example given here, the intervention, of eating healthier food, was the recipes provided in the application. The same feature was not used as it was not felt as being tailored to the user's self-image or daily need and hence not experienced as valuable to them, losing the benefit of using it from a societal perspective.

4. Conclusions

This paper has highlighted the gap between the expected and the experienced value of a service by contextualizing the construction of an understanding of a service, and, its value aspects by means of narrative analysis. Due to the nature of narrative analysis the work conducted here cannot immediately be transferred to other contexts and services.

The main reason for not using the one feature that was the core of the service was that the users did not feel that it depicted them and their self-image in the right way. Due to this, even though many other aspects of the service were still being used, the fundamental feature was not. This had the effect that the potential societal benefit that a service of this kind could provide was lost due to a mismatch between expectation and confirmation.

Acknowledgments

This work has been supported by the AAL Joint Programme and Swedish Innovation Agency; VINNOVA. The authors also extend their gratitude towards the AAL-FOOD project consortium with partners for their valuable contributions.

References

[1] C. Grönroos and J. Gummerus, The service revolution and its marketing implications: service logic vs service-dominant logic, *Managing Service Quality: An International Journal* **24** (2014), 206-229.
[2] A. Wilson, V.A. Zeithaml, M.J. Bitner, and D.D. Gremler, *Services Marketing: Integrating Customer Focus Across the Firm*, McGraw Hill, UK, 2012.
[3] S.L. Vargo and R.F. Lusch, Service-dominant logic: continuing the evolution, *Journal of the Academy of Marketing Science* **36** (2008), 1-10.
[4] W. Albert and T. Tullis, *Measuring the user experience: collecting, analyzing, and presenting usability metrics*, Newnes, 2013.
[5] D. Norman, *The design of everyday things: Revised and expanded edition*, Basic Books (AZ), 2013.
[6] A. Parasuraman, V.A. Zeithaml, and L.L. Berry, A conceptual model of service quality and its implications for future research, *the Journal of Marketing* (1985), 41-50.
[7] S. Boll, W. Heuten, E.M. Meyer, and M. Meis, Development of a multimodal reminder system for older persons in their residential home, *Informatics for Health and Social Care* **35** (2010), 104-124.
[8] M.J. Bitner, Servicescapes: the impact of physical surroundings on customers and employees, *the Journal of Marketing* (1992), 57-71.
[9] A.W. Frank, Just listening: Narrative and deep illness, *Families Systems and Health* **16** (1998), 197-212.
[10] T. Riley and P. Hawe, Researching practice: the methodological case for narrative inquiry, *Health education research* **20** (2005), 226-236.
[11] J. Allen, L. Boffi, L. Burzagli, P. Ciampolini, I. De Munari, and P.L. Emiliani, FOOD: Discovering Techno-Social Scenarios for Networked Kitchen Systems, in: *Assistive Technology: From Research to Practice,* P. Encarnação, L. Azevedo, G.J. Gelderblom, A. Newell, and N.-E. Mathiassen, eds., IOS Press Ebooks, pp. 1143 - 1148. 2013.
[12] C.K. Riessman, *Narrative analysis*, Sage, 1993.
[13] E.A. Schegloff, "Narrative Analysis" Thirty Years Later, *Journal of narrative and life history* **7** (1997), 97-106.
[14] A.W. Frank, The standpoint of storyteller, *Qualitative health research* **10** (2000), 354-365.
[15] R.L. Oliver, A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions, *Journal of Marketing Research* **17** (1980), 460-469.
[16] D.K. Tse and P.C. Wilton, Models of consumer satisfaction formation: An extension, *Journal of Marketing Research* (1988), 204-212.